

The specification has been amended by replacing the French patent application number with the corresponding U.S. patent, and by replacing "absorbent" with --adsorbent-- as discussed above.

Claim 1 has been amended by incorporating the subject matter of Claim 4 therein, and by reciting that the layer comprises an absorbent material porous to water, as supported in the specification at page 5, lines 36-37, combined with the disclosure at page 6, lines 10-22.

Claim 4 has been canceled. Claims 5-7 have been amended to be consistent with the amendment to Claim 1. Claim 14 has been amended to depend on Claim 12. Claim 15 has been cancelled. The remaining amendments substitute "absorbent" with --adsorbent-- for reasons discussed above.

New Claims 19-23 have been added, as supported in the specification at page 6, lines 1-22.

No new matter has been added by the above amendment. Claims 1-3, 5-12, 14, and 16-23 are now pending in the application.

#### REMARKS

Applicants thank the Examiner for the courtesy extended to Applicants' attorney during the interview held July 2, 2002, in the above-identified application. During the interview, Applicants' attorney discussed the various issues raised in the Office Action, and explored various avenues for demonstrating patentability. The discussion is summarized and expanded upon below.

The present invention is drawn to a transparent glazing containing an antifrosting absorbent layer, preferably for use in relatively cold environments, such as refrigerated enclosures, in order to reduce frost deposits and maintain visibility of items in the enclosure.

As recited in now-amended Claim 1, the invention is a transparent glazing comprising at least one viewing area, wherein the viewing area is combined with an antifrosting absorbent layer deposited on at least one surface of said area, wherein said layer comprises at least one hydrophilic polymer and an absorbent material porous to water.

The rejection of Claims 1-2, 4-9 and 16-17 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,262,475 (Creasy), is respectfully traversed. Creasy discloses hydrophilic compositions which are fog-resistant, which may include a crosslinked hydrophilic resin of a water-soluble polyvinyl alcohol and a water-soluble polyvinyl pyrrolidone, deposited on, for example, a glass substrate such as a window. As the Examiner recognizes, Creasy disclose and suggest nothing with regard to porosity or pore diameter in the wet state of his anti-fogging composition. However, the Examiner finds that the film of Creasy is inherently porous, since Applicants' materials and those disclosed by Creasy overlap. However, there is no scientific or technological reason to believe that any of the components of Creasy's fog-resistant composition comprises an absorbent material porous to water, or that his anti-fog coating *per se* is porous, especially in view of Creasy's disclosure that surfaces coated with his composition are more readily wetted with water. See the Abstract thereof. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-4, 7-10, and 15-17 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,478,909 (Taniguchi et al), is respectfully traversed. Taniguchi et al is drawn to an anti-fogging film derived from the curing of polyvinyl alcohol, finely-divided silica and a particular organic silicon compound and a hydrolysate thereof, on a substrate such as glass windows. The Examiner recognizes that Taniguchi et al does not disclose or suggest porosity or pore diameter of their anti-fogging coating composition in the wet state, but finds that the film of Taniguchi et al is inherently porous, since Applicants' materials and

those disclosed by Taniguchi et al overlap. In reply, and as noted by Applicants' attorney during the above-referenced interview, one of Taniguchi et al's materials is silica, which is the main or only component of sand, which is clearly not porous. As discussed above with regard to the rejection over Creasy, the Examiner has no scientific or technological basis to assume that Taniguchi et al's anti-fogging coating film comprises an absorbent material which is porous to water, or is porous *per se*. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1, 2, 14 and 18 under 35 U.S.C. §102(b) as anticipated by JP 10-167764 (Matsumoto), is respectfully traversed. Matsumoto discloses applying a synthetic resin film to impart anti-icing properties to a substrate, such as the window glass of an automobile. However, Claim 1 now contains the limitations of Claim 4, not subject to this rejection. In addition, Matsumoto neither discloses nor suggests the inclusion in his synthetic resin film of an absorbent material porous to water, or that his synthetic resin film is porous *per se*. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-2, 4, 7, and 10-11 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,767,671 (Parker et al), is respectfully traversed. Parker et al discloses an anti-mist coating for glass or plastic substrates comprising a hydrophilic polymer comprising a hydrophilic polyurethane, which is hydratable with water. However, Parker et al neither discloses nor suggests the combination of a hydrophilic polymer and an absorbent material which is porous to water. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-2, 4-5, 7-11 and 15 under 35 U.S.C. §102(b) as anticipated by EP 0908500A1 (Ohtaka et al), is respectfully traversed. Ohtaka et al disclose an anti-fog article obtained by coating a substrate, such as glass, with an anti-fog coating material

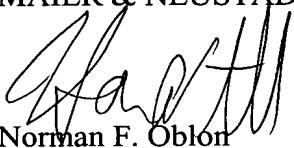
coating material to form thereon an anti-fog coating film that is hydrophilic, moisture absorptive, insoluble and excellent in surface hardness. However, Ohtaka et al neither disclose nor suggest the combination of a hydrophilic polymer and an absorbent material porous to water. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1, 11 and 12 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,052,965 (Florentin et al) in view of Matsumoto, is respectfully traversed. Florentin et al is discussed in the specification herein beginning at page 2, line 8. Matsumoto has been discussed above. It is respectfully submitted that without the present disclosure as a guide, one skilled in the art would not have combined Florentin et al and Matsumoto. Nevertheless, even if the combination were made, the result would still not be the presently-claimed invention, since neither Florentin et al nor Matsumoto disclose or suggest the presently-recited antifrosting absorbent layer. Accordingly, it is respectfully requested that this rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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Serial No: 09/926,609  
Amendment Filed on: herewith

IN THE TITLE

(New)

IN THE ABSTRACT OF THE DISCLOSURE

(New).

IN THE SPECIFICATION

Page 2, beginning at line 8, please replace the paragraph as follows:

--[The French patent application filed in the name of Saint-Gobain Vitrage under the number FR 97/09772] U.S. Patent No. 6,052,965 describes such a door of a refrigerated enclosure which includes a vacuum glazing unit. It thus proposes a door of a refrigerated enclosure essentially consisting of an insulating panel composed of at least two glass substrates between which a vacuum has been created, which substrates are separated from each other by studs distributed over the entire surface and are joined around their periphery by an inorganic seal. In this way, the conventional insulating glazing units normally used are replaced with one insulating glazing unit consisting of at least two glass sheets between which a vacuum has been created, which we will call hereafter vacuum insulating glazing. This type of vacuum insulating glazing has, for a total thickness markedly less than that of

the conventional insulating glazing units, substantially improved thermal insulation properties.

Page 3, beginning at line 32, please replace the paragraph as follows:

This objective is achieved according to the invention by a transparent glazing unit having at least one viewing area, this area being combined with an antifrosting [absorbent] adsorbent layer deposited on at least one surface of the said area.

Page 4, beginning at line 1, please replace the paragraph as follows:

Such a glazing unit, especially when it is an insulating glazing unit and more particularly a vacuum insulating glazing unit, can be used in a door of a refrigerated enclosure having at least one viewing area consisting, for example, of the said vacuum insulating glazing unit combined with an [absorbent] adsorbent layer advantageously deposited on that surface of the said viewing area which is in contact with the refrigerated environment.

Page 4, beginning at line 15, please replace the paragraph as follows:

According to a first embodiment, the antifrosting [absorbent] adsorbent layer is deposited directly on the glass, and more specifically on that surface of the vacuum insulating glazing unit which is in contact with the refrigerated environment. This is the surface in contact with the refrigerated environment when the door is in its closed position. Such a layer may be deposited by techniques of the sputtering or coating type, especially of the flow-coating or deep-coating type, the deposition being carried out before or after manufacturing of the vacuum glazing unit. Advantageously, an adhesion primer of the silane type is provided; it is either deposited beforehand on the glass or at the same time as the layer is formed, the silanes being introduced into the composition of the antifrosting [absorbent] adsorbent layer.

Page 4, beginning at line 31, please replace the paragraph as follows:

According to a second embodiment, the antifrosting [absorbent] adsorbent layer is deposited, for example according to one of the abovementioned methods, on a plastic film and the plastic film is itself fastened to the vacuum insulating glazing unit. The plastic film used is advantageously a polycarbonate film preferably having a thickness of less than 3 millimetres; this plastic is especially chosen for its mechanical strength properties. The plastic film is fastened to the glazing in a sealed manner so that no trace of moisture can exist between the glass surface and the plastic film. It may be fastened, for example, by adhesive bonding around the periphery; the air layer possibly existing between the glass and the plastic film must then advantageously not exceed 3 mm. The fastening may also be achieved by means of an [aluminium] aluminum frame combined with a desiccant and an adhesive, similar to that for an insulating glazing unit of conventional construction; advantageously, the air layer between the glass and the plastic film then does not exceed 10 mm.

Page 5, beginning at line 13, please replace the paragraph as follows:

According to an advantageous embodiment of the invention, the antifrosting [absorbent] adsorbent layer consists of at least one hydrophilic polymer. Such a polymer may be non-limitingly chosen from the following polymers: a polyvinylpyrrolidone of the poly (N-vinyl-2-pyrrolidone) or poly (1-vinylpyrrolidone) type, a polyvinylpyridine of the poly (N-vinyl-2-pyridine) type, of the poly(N-vinyl-3-pyridine) type or of the poly (N-vinyl-4-pyridine) type, a polyacrylate of the poly(2-hydroxyethyl acrylate) type, a polyacrylamide of the poly (N',N-hydroxyacrylamide) type, a polyvinyl acetate, a polyacrylonitrile, a polyvinyl alcohol, a polyacrolein, a polyethylene glycol or a polyoxyethylene. It may also be a copolymer based on two or more of the abovementioned polymers.

Page 6, beginning at line 10, please replace the paragraph as follows:

The inventors have thus been able to demonstrate that the presence of a porous layer which includes a hydrophilic polymer on the surface of the glazed area allows water to be [absorbed] adsorbed. This principle prevents the formation of water droplets and thus the formation of a film liable to frost over and affect visibility through the glazed area. The choice of hydrophilic polymer and of the porosity in the case of a porous absorbent material make it possible to control the antifrosting behaviour of the layer. In particular, increasing the porosity allows the rate of water [absorption] adsorption and the water absorptivity, as well as the level of water in microdroplet form, to be controlled.

Page 6, beginning at line 36, please replace the paragraph as follows:

Whatever the nature of the antifrosting [absorbent] adsorbent layer and the method of producing the latter, it advantageously has a thickness of less than 100 microns, preferably less than 50 microns and more preferably less than 35 microns and, in some cases, preferably less than 25 microns and more preferably less than 20 microns.

Page 7, beginning at line 36, please replace the paragraph as follows:

Before attaching it, the polycarbonate film is coated with an antifrosting [absorbent] adsorbent layer, this being deposited so as to face the inside of the refrigerated enclosure when the door is in the closed position. The layer thus deposited forms a polymeric porous three-dimensional network based on polyvinylpyrrolidone and polyurethane.

Page 9, beginning at line 18, please replace the paragraph as follows:

The presence of the [absorbent] adsorbent layer therefore prevents the formation of frosting when the door is opened under normal operating conditions.--

IN THE CLAIMS

--1. (Twice amended) A transparent glazing comprising at least one viewing area, wherein the viewing area is combined with an antifrosting [absorbent] adsorbent layer deposited on at least one surface of said area, wherein said layer comprises at least one hydrophilic polymer and an absorbent material porous to water.

4. (Canceled).

5. (Twice amended) The glazing according to Claim [4] 1, wherein the hydrophilic polymer is crosslinked.

6. (Twice amended) The glazing according to Claim [4] 1, wherein the hydrophilic polymer is a polymer or copolymer of vinylpyrrolidone.

7. (Twice amended) The glazing according to Claim [4] 1, wherein the [layer includes an] absorbent material is organic or inorganic absorbent material.

10. (Twice amended) The glazing according to Claim 1, wherein the antifrosting [absorbent] adsorbent layer has a thickness of less than 100 microns.

14. (Twice amended) The glazing according to Claim [18] 12, wherein the antifrosting [absorbent] adsorbent layer is deposited on the surface of the viewing area which is in contact with a refrigerated environment.

15. (Canceled).

Claims 19-23 (New).--